Claims:

1. An emitter comprising:

an electron supply layer;

an dielectric layer on said electron supply layer defining an emission area; and

a filled zeolite emission layer in the emission area and in contact with said electron supply layer, said filled zeolite emission layer comprising a plurality of cages and having semiconductor materials held within said cages.

2. The emitter according to claim 1, wherein the thickness of said filled zeolite emission layer is in the approximate range of 0.05– 0.5 micrometers.

3. The emitter according to claim 1, wherein said semiconductor materials comprise at least one of the group consisting of silicon, germanium and combinations thereof.

4. The emitter according to claim 1, wherein said cages are spaced from about 5 Å to about 15 Å apart thereby creating a quantum dot structure.

5. The emitter according to claim 1, wherein said filled zeolite emission layer allows electron movement along a single axis.

6. The emitter according to claim 1, wherein the emitter includes means for creating an electrical field to stimulate tunneling.

7. The emitter according to claim 6, wherein the means for creating comprises a metal contact structure and a thin metal layer disposed over said metal contact structure and said filled zeolite emission layer.

8. The emitter according to claim 7, wherein said thin metal layer is selected from a group comprising Pt, Au, Ta and combinations thereof.

9. The emitter according to claim 8, wherein said thin metal layer is approximately 50 - 100Å.

10. The emitter according to claim 7, wherein said metal contact structure is part of a circuit interconnect metal structure in an integrated circuit including other devices.

11. The emitter according to claim 6, wherein the emitter is disposed relative to a memory medium to direct emissions toward the memory medium and thereby cause an effect in said memory medium.

12. The emitter according to claim 6, wherein the emitter is disposed relative to a display medium to direct emissions toward said display medium and thereby cause an effect in said display medium.

13. The emitter according to claim 6, wherein said electron supply layer comprises a silicon or polysilicon substrate and the emitter is disposed on said silicon or polysilicon substrate with emitter control circuitry to control the emitter.

14. A method for forming an emitter, comprising the steps of:

forming a patterned oxide layer to define an emission area upon an electron supply layer; and

forming a quantum dot zeolite emission layer comprising a plurality of cages and having semiconductor materials held within said cages.

15. The method of claim 14, further comprising a step of forming a metal contact structure on the pattered oxide layer.

16. The method of claim 15, further comprising a step of forming a thin metal layer on the quantum dot zeolite emission layer and the metal contact structure.

17. The method of claim 15, wherein the metal contact structure comprises a single metal layer.

18. The method of claim 15, wherein the metal contact structure comprises multiple metal layers.

19. The method of claim 14, wherein said step of forming an quantum dot zeolite emission layer comprises forming a zeolite layer having a thickness in the approximate range of 0.05 – 0.5 micrometers.

20. The method of claim 14, performed as part of an integrated circuit formation process to form the emitter as part of an integrated circuit including emitter control circuitry.

21. An integrated emitter circuit comprising:

a silicon or polysilicon substrate;

a dielectric layer on said silicon or polysilicon substrate defining an emission area;

a filled zeolite emission layer in the emission area and in contact with said silicon or polysilicon substrate, said filled zeolite emission layer being formed by one or more zeolites and combinations thereof, said one or more zeolites comprising a plurality of cages and having semiconductor materials held within said cages;

a circuit interconnect electrical contact structure on said oxide layer; and

a thin metal layer on said filled zeolite emission layer and said electrical contact structure.

22. The device of claim 21, wherein said filled zeolite emission layer comprises approximately 0.05 – 0.5 micrometers in thickness.

23. The device of claim 21, wherein said thin metal layer is selected from a group comprising Pt, Au, Ta and combinations thereof.

24. The device of claim 21, wherein said electrical contact structure comprises part of a circuit interconnect pattern connecting the device to other devices in an integrated circuit.

25. The device of claim 21 formed as part of an integrated circuit in a memory device, the memory device using electron emissions from the electron emitter to cause an effect in a memory medium disposed opposite the emitter.

26. The device of claim 21, formed as part of a memory device, the memory device including a plurality of the emitters and comprising:

a lens for focusing an electron beam from the emitter to create a focused beam; and

a memory medium in close proximity to the plurality of emitters, the memory medium having a storage area being in one of a plurality of states to represent information stored in the storage area, the states being responsive to the focused beam such that

an effect is generated in the storage area when the focused beam impinges upon the storage area;

a magnitude of the effect depends upon the state of the storage area; and

information in the storage area is read by measuring the magnitude of the effect.

27. The device of claim 26, further comprising:

a mover to position said memory medium with respect to the plurality of emitters; and

a reader circuit integrated in said mover.

28. The device of claim 21, formed as part of a display device, the display device further comprising:

a lens for focusing an electron beam from the emitter; and

a coating on the lens to capture electrons from the emitter.

29. The device of claim 21, formed as part of a display device, the display device further comprising:

a lens for focusing an electron beam from the emitter; and

a display medium in close proximity to the emitter, the display medium producing a visible emission in response to the focused beam.

30. An emitter comprising:

an electron supply layer;

an oxide layer on said electron supply layer defining an emission area; and

a quantum dot emission layer in the emission area and in contact with said electron supply layer, said quantum dot emission layer comprising a means for providing a plurality of cages and having semiconductor materials held within said cages.

31. The emitter according to claim 30, wherein said quantum dot emission layer allows electron movement along a single axis.

32. The emitter according to claim 30, wherein said means for providing a plurality of cages further comprises using regular step functions for a quantum dot structure such that a cascade effect is created thereby increasing the tunneling of electrons.

33. The emitter according to claim 30, further comprising an extracting layer adjacent to the quantum dot emission layer.

34. The emitter of claim 33 wherein the extracting layer is an extracting gate of material that has no physical contract with the quantum dot emission layer.

35. The emitter of claim 33, further comprising:

an insulating material disposed on the quantum dot emission layer; and

a thin metal layer disposed on the insulating material thereby creating said extracting layer.